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37 CFR 1.8(a)

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Date of Deposit: 03-02-04 By: Deborah A. Rypacek

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In Re Application of:		§		
	Larry R. Bersuch et al.	§	Examiner:	Todd J. Kilkenny
		§		
Serial No.:	09/938,065	§	Art Unit:	1733
		§		
Filed:	08/23/2001	§		
		§	Attorney Docket No.: TA-00524	
Title:	**Paste-Bond Clevis Joint**	§	[Formerly 0408RF.045510]	

TRANSMITTAL LETTER

Enclosed is an APPELLANTS' APPEAL BRIEF BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES in triplicate.

Respectfully submitted,

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Reg. No. 27,536
Attorney for Applicant

Date: March 2, 2004

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APPEAL BRIEF

This is an appeal from the final rejection of claims 1-18 in the above referenced patent application. The final action is dated 10/10/2003.

APPELLANTS' BRIEF (37 C.F.R. § 1.192)

I. REAL PARTIES IN INTEREST

Larry R. Bersuch, 1516 Country Manor Road, Fort Worth, Texas 76134; Dan V. Heap, 902 Silver Streak Drive, Fort Worth, Texas 76131; and Ross A. Benson, 210 Parkway Drive, Willow Park, Texas 76087, and Lockheed Martin Corporation, 6801 Rockledge Dr., Bethesda, MD 20817 are the real parties in interest regarding the captioned patent application.

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Deborah Rypacek

II. RELATED APPEALS AND INTERFERENCES

Two related appeals are pending, involving patent application Serial Number 09/898,633 filed on 7/02/01, and patent application Serial Number 09/946,627 filed on 8/31/01.

III. STATUS OF CLAIMS

A. Total Number of Claims

Eighteen (18) claims were originally filed in the application. Eighteen (18) claims remain for consideration.

B. Status of the Claims

1. Claims cancelled: None
2. Claims withdrawn (but not cancelled): None
3. Claims pending: 18
4. Claims allowed: None
5. Claims rejected: Claims 1-18

C. Claims on Appeal

Claims 1-18 are presently on appeal.

IV. STATUS OF AMENDMENTS

Claims 1-18 were finally rejected in an office action dated 10/10/2003.

V. SUMMARY OF THE INVENTION

The invention generally relates to assembly of components 15, 13 using woven preforms 11, and more particularly relates to assembly using a paste adhesive 47 within a clevis 20 of a cured preform 11.

Using a three-dimensional, Pi-shaped, woven preform, a method is provided to assemble first composite component 15 and second composite component 13, which for example may be a frame 15. The preform 11 is infused with resin, and at least one surface of the preform 11 is adhered to at least one surface of the first component 15 using a film adhesive 47. The preform 11 is cured while an oversized tool 35 coated with non-stick material is located within a clevis 20 formed by two legs 21 of the preform 11. A removable peel ply 33 is located between the tool 35 and the clevis. The preform 11 is cured in a vacuum bag using semi-rigid over-presses 39 are used during curing to distribute inwardly-directed forces across the preform 11. After curing, the tool 35, the over-presses 39, and peel ply 33 are removed from the vacuum bag, and adhesive 47 is injected into the clevis 20. The second component 13 is inserted into the clevis 20, the adhesive 47 adhering to an inner surface of the clevis 20 and to at least one surface of the second component 13 for retaining the second component within the clevis, the second component having a smaller width than the tool 35.

More specifically, after curing, tool 35 is removed from clevis 20, and peel ply 33 is peeled from inner surfaces 23 and surface 25. An adhesive 47 that is preferably in a paste form, is injected into clevis 20, and the outer surfaces 49, 51 of frame 13 are wetted with additional adhesive 47. Frame 13 is inserted into clevis 20, adhesive 47 filling the gap between inner surfaces 23 of legs 21 and surfaces 49 of frame 13, and between surface 25 of preform 11 and surface 51 of frame 13. Since the amount of oversizing of tool 35 determines the amount and thickness of adhesive 47 remaining between frame 13 and inner surfaces 23 after insertion of frame 13, the width of tool 35 will be determined from the assembly tolerance requirements and by the strength required in the joint. Mechanical pressure is applied to maintain the proper

positioning of parts 13, 15 and adhesive 47 is cured to form a bonding layer between cured preform 11 and frame 13.

VI. ISSUES

1. Whether claims 1, 4, and 7-11 are unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler.

2. Whether claims 2, 6, 12, 14, and 16-17 are unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al.

3. Whether claim 3 is unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Seeman.

4. Whether claim 5 is unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Sloman.

5. Whether claim 13 is unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Seeman.

6. Whether claim 15 is unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Sloman.

7. Whether claim 18 is unpatentable under 35 U.S.C. § 103(a), for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Seeman and Sloman.

VII. GROUPING OF CLAIMS

1. Claims 1, 4, and 7-11 are grouped with respect to issue 1 set forth above. It is suggested that the Board choose claim 1 as representative of this group.

2. Claims 2, 6, 12, 14, 16, and 17 are grouped with respect to issue 2 set forth above. It is suggested that the Board choose claim 2 as representative of this group.

3. Claim 3 stands alone with respect to issue 3 set forth above.

4. Claim 5 stands alone with respect to issue 4 set forth above.

5. Claim 13 stands alone with respect to issue 5 set forth above.

6. Claim 15 stands alone with respect to issue 6 set forth above.

7. Claim 18 stands alone with respect to issue 7 set forth above.

VIII. ARGUMENT

Applicant first and foremost alerts the Board that all of the claims were rejected over Wanthal et al. with various combinations of references. Therefore, Applicant's assertion that the Wanthal et al. reference does not operate as a prior art reference properly disposes of all seven issues on appeal.

Issue 1

The Examiner has rejected claims 1, 4, and 7-11 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler.

As a basis for rejecting the claims, the Examiner regarded Wanthal et al. as a prior art reference. In the second paragraph of the Final Rejection of 10/10/2003, the Examiner appears to assume that the Wanthal et al. document is prior art simply because it was a "cited published paper supplied in applicant's IDS." Importantly, the Examiner thus implies that citing a

reference in an IDS operates as an inherent admission by Applicant that the document is prior art. This implication is entirely without merit.

Applicant sent the Wanthal et al. document to the Examiner in order to leave no doubt that Applicant was complying with 37 CFR § 1.56. If there is any doubt whatsoever that a particular document should be provided in an information disclosure statement, the best practice is to go ahead and submit it. Otherwise, if litigation results, an opponent is likely to argue that the Examiner should have made the decision as to whether it is prior art, rather than the Applicant unilaterally making that decision. Merely submitting the Wanthal et al. reference in an information disclosure statement is clearly not an admission that the document is prior art, as the Examiner erroneously implies.

Applicant disagrees with the Examiner's conclusion—Wanthal et al. is not prior art. During prosecution, Applicant submitted a detailed and comprehensive Declaration outlining the underlying facts and circumstances surrounding the Wanthal et al. document. These sworn facts, supported overwhelmingly by the following legal analysis on "printed publications," conclusively prove that Wanthal et al. is not prior art.

Whether a document constitutes a "printed publication" under 35 U.S.C. § 102(b) is a question of law based upon underlying fact issues. *See Northern Telecom Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990).

The touchstone of the "printed publication" analysis is public accessibility. *See In Re Tenney*, 254 F.2d 619, 117 USPQ 348 (CCPA 1958). *See also Aluminum Co. of America v. Reynolds Metals Co.*, 14 USPQ2d 1170 (N.D. Ill. 1989). Information is considered publicly accessible if any person skilled in the art who is concerned with or interested in the subject matter to which the publication relates, could have access to the documents and avail themselves

of the information contained therein by the exercise of reasonable diligence. *See id. See also In re Hall*, 781 F.2d 897, 228 USPQ 453 (Fed. Cir. 1986). *See also In re Wyer*, 655 F.2d 221, 210 USPQ 790 (C.C.P.A. 1981). *See also Northern Telecom Inc. v. Datapoint Corp.*, 9 USPQ2d 1577 (N.D. Tex. 1988), *aff'd in part, rev'd in part*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990).

In general, a distribution to a limited group with an injunction to secrecy is not a publication. *See Northern Telecom Inc. v. Datapoint Corp.*, 9 USPQ2d 1577 (N.D. Tex. 1988), *aff'd in part, rev'd in part*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990). In *Northern Telecom*, documents were prepared as part of a government project. They were distributed to at least 50 commercial and private individuals and companies involved in the project. There was evidence, however, that such distribution may have been made with a restrictive notice on the documents. Although the documents were contained in a library at a specific corporation and were not classified, access to the library was restricted only to persons authorized by the corporation to use the library. The Federal Circuit held that because there was no evidence that anyone could have had access to the documents by the exercise of reasonable diligence, it was not a "printed publication" under the statute. *See id.*

Further, in *Ex parte Kroenert*, 144 USPQ 133 (Pat. Off. Bd. App. 1960), a United States military specification was listed in an "Index of Specifications." The Index was on sale to the public. Nevertheless, the Board held that the specification itself was not a "printed publication" under the statute. Advance permission was needed to obtain access to the specification, and there was no indication that "any technically or scientifically qualified person could have had a copy ... merely for the asking." *Ex parte Kroenert*, 144 USPQ 133 (Pat. Off. Bd. App. 1960).

Even an inherently understood, albeit silent, limitation on access can operate as an effective restriction. *See Aluminum Co. of America v. Reynolds Metals Co.*, 14 USPQ2d 1170 (N.D. Ill. 1989). In *ALCOA*, the patentee, under terms of a contract with a government agency, periodically distributed a progress letter to 33 entities in and outside government, including aluminum producers, aircraft manufacturers, government agencies, branches of the military and academic researchers. The government agency initially required the patentee to stamp the reports "Distribution of This Report is Unlimited." It later changed its mind and directed the patentee to label the letters with the following "export control" notice:

> "This Document is Subject to Special Export Controls and Each Transmittal to Foreign Governments or Foreign Nationals May Be Made Only With Prior Approval of the Naval Air Systems Command." *See id.*

In *Aluminum Company*, the issue arose whether one of the progress letters distributed to the designees with the export control notice constituted a printed publication. The district court held that it did not. It conceded that at "first glance" the letters did appear to meet the public accessibility test of publication, by stating that "thirty-three copies were made and distributed, and not just to government groups ... Thirteen nongovernmental companies and individuals received copies too ... including big commercial competitors like Kaiser and Reynolds." In addition, only the export control notice put any explicit restriction on distribution beyond the initial thirty-three, and by its terms, that notice did no more than limit access to United States citizens, of whom there are more than 220 million—scarcely the sort of restriction that should ordinarily prevent a document from being classified as a "printed publication" under the statute. In addition, there was no evidence in the record that access was ever denied to anyone who sought it. *See id.*

Nevertheless, the court found that the letters were not accessible to the public in fact because all the designees treated the letters as confidential and not for further distribution. The court stated that virtually everyone who received the Third Progress Letter treated it as if it had been marked confidential. For example, Reynolds never circulated the copy it received to anyone outside its organization, and Kaiser went so far to keep its copy in a protected area, screened even from some of its own employees. The court summarized: "In sum, the evidence does not show that the Third Progress Letter was ever treated as a publication. Instead, it suggests that within defense industry circles, the practice was to keep documents stamped with export control notices under wraps." *See id.*

To summarize, in *Northern Telecom*, restrictive notices were placed on the documents. In both *Northern Telecom* and *Ex parte Kroenert*, restrictions on access to the documents existed, including requirements of advance authorization to review the documents. In *ALCOA*, the documents included export control notices, invoking a defense industry practice to keep documents under such export controls confidential.

Similarly, in the case at hand, a report was given orally at a conference primarily for government officials and government contractors. There's no evidence that the report was given out to the participants at the conference. The meeting was a "Closed Session," and access restrictions prohibited persons from attending the session unless they complied with Department of Defense requirements. Further, the paper contained a conspicuous warning, similar to the *Alcoa* case discussed above to alert readers that the document contains technical data whose export is restricted by Federal Law.

Therefore, applying these facts to the law as stated in *Northern Telecom*, *Ex parte Kroenert*, and *ALCOA*, applicant submits that Wanthal et al. is not a printed publication because it was not accessible by the general public. There is no evidence that with the exercise of reasonable diligence, any person skilled in the art who is concerned with or interested in the subject matter to which the publication relates, could have access to the documents and avail themselves of the information contained therein. Wanthal et al. has never been publicly accessible as defined, *supra*. The Wanthal et al. technical paper was presented at a closed session of a conference that could be attended only by a select group of people associated with defense contractors. No copies of the paper were given out at the conference. The paper is not accessible on any databases and is not available by contacting the Society for Advancement of Material and Process Engineering. Applicants had a copy because one of the co-authors is an employee of the assignee of this application.

Finally, the Wanthal et al. paper does not establish that the invention was "known by others" in this country before the invention by the applicant within the meaning of 35 U.S.C. § 102(a). If the Wanthal et al. paper is not a "printed publication" under § 102(b), the oral presentation at a restricted conference cannot be considered to be evidence known by others; otherwise, the *Northern Telecom*, *Ex parte Kroenert*, and *Aluminum Company* cases would have held oppositely. To be known, the information must have been accessible to those who might be interested in the subject matter. As stated in the attached declaration, however, countless others may find this information to be of interest. The composite fabrication techniques of this application are applicable to many industries besides military aircraft construction.

With respect to paragraph 2 of the Final Action, the removal of the Wanthal et al. reference leaves only Kohler. Köhler does not disclose a woven preform. Referring to Figure 4,

flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 2 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

Applicant therefore requests allowance of claims 1, 4, and 7-11.

Issue 2

The Examiner has rejected claims 2, 6, 12, 14, 16, and 17 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler and Owens et al.

Owens et al. discloses a method of testing a 3-D woven preform. The metallic core shown in Figure 1 is bonded by a film adhesive to the preform. The metallic core shown is employed in the testing and is not tooling that is subsequently removed to provide a clevis. Because of the legend "film adhesive" in Figure 1, one skilled in the art would realize that the resin of the 3-D woven preform is being cured and the preform bonded by the film adhesive to

the web simultaneously. A film adhesive requires pressure to best work, and the pressure would have to be exerted from the outer sides of the legs against the metal core. In order to exert the pressure, the legs of the preform would have to be flexible, and thus uncured. Consequently, the curing of the preform takes place while the film adhesive is bonding the legs to the metallic core.

If the preform of Figure 1 of Owens et al. was pre-cured, then an adhesive paste would be used to bond the metallic core to the preform rather than a film adhesive. Adhesive paste can be thicker than a film adhesive and typically does not require outside pressure against the legs to form a bond. Figure 7 shows a web of 2-D material located within a slot of a preform, but provides no explanation of whether or how it is attached to the preform. There is no discussion in the paper of how any the specimens are formed.

Applicant's invention is for use when it is not feasible to cure the preform while simultaneously bonding it with a film adhesive to a web located between the legs. This might occur, for example when two halves of a wing assembly are being bonded together. One half contains a preform with a clevis while the other half has a web. In such a case, there is no access to the preform and the web when the halves are positioned together. There isn't a way to vacuum bag the preform and the web when the two halves are being bonded together so as to provide the desired amount of pressure for curing and bonding.

Applicant's claim 2 requires inserting a sizing tool between the legs and curing the resin while the tool is located between the legs to define the slot. It then requires removing the tool and applying an adhesive into the slot. The claim then requires inserting the second component into the slot to bond the second component to the preform. Consequently, the preform is already cured before it is adhered to the second component. Owens et al. does not disclose a pre-cured

preform, rather Owens et al. suggests placing the second component between the legs of the preform and bonding and curing the preform simultaneously.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 2 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

One would not combine Owens et al. and Köhler because Owens et al. deals with testing the strength of a woven preform that is located between first and second components. Köhler, on the other hand, teaches pultruding a flange and attaching a web to the flange. Neither reference suggests curing a woven preform while having a sizing tool located between the legs, then removing the sizing tool. Claim 2 requires a film adhesive 27 between first component 15 and preform base 17. The references do not suggest placing a film adhesive between an uncured preform and a first component and placing a sizing tool between legs of the preform, then curing the preform while simultaneously bonding it to the first component.

Applicant therefore requests allowance of claims 2, 6, 12, 14, 16, and 17.

Issue 3

The Examiner has rejected claim 3 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Seeman.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler and Seeman.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 3 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

Seeman, cited in paragraph 4 of the Final Action, teaches a peel ply and vacuum curing procedures. Peel ply 7 is located on the exterior of the composite member being formed by a vacuum process. There is no suggestion of using a peel ply between a sizing tool and the inside surfaces of legs of a woven preform. Claim 3 deals with the peel ply located within the slot, and is not shown in the references as previously mentioned.

Applicant therefore requests allowance of claim 3.

Issue 4

The Examiner has rejected claim 5 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Sloman.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler and Sloman.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 5 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

Sloman, newly cited in paragraph 5 of the Final Action, teaches a caul plate or pressure intensifier to hold and align composite components during curing to transmit normal pressure across the composite components. However, there is no suggestion of the caul plates or pressure intensifiers being generally triangular in cross-section to distribute a force across the composite components. Claim 5 deals with over-presses, which are the members 41 shown in Figure 1. Members 41 are generally triangular in shape, although the outer side is somewhat concave in the preferred embodiment. This results in an application of force to the corner between base 17 and each leg 21 to avoid excess resin in that area. Thus, it is submitted that claim 5 deals with

each of the over-presses being generally triangular in cross-section for distributing a force across the preform, and is not shown in the references as previously mentioned.

Applicant therefore requests allowance of claim 5.

Issue 5

The Examiner has rejected claim 13 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Seeman.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler, Owens et al., and Seeman.

Claim 12 is an independent claim from which claim 13 depends, and requires inserting a sizing tool between the legs of a woven preform and curing the resin and bonding the preform to the first component while the tool is located between the legs to define a slot. The references do not show a sizing tool for forming a clevis. Nor do the references show a sizing tool being utilized to form a clevis while simultaneously bonding the preform to the first component. The claim also requires after removing the sizing tool, applying a paste adhesive to the slot, then inserting the second component into the slot for bonding by the paste adhesive.

Owens et al. discloses nothing concerning a sizing tool. Owens et al. discloses the use of a film adhesive between the legs and the metal core member, which implies that the woven preform is being cured while the film adhesive is simultaneously bonding the core to the preform. The metallic core could thus not be a sizing tool. While Köhler discloses the use of a

paste adhesive, Köhler does not suggest the use of a woven preform wherein a sizing tool was utilized to form the clevis.

Further, Owens et al. discloses a method of testing a 3-D woven preform. The metallic core shown in Figure 1 is bonded by a film adhesive to the preform. The metallic core shown is employed in the testing and is not tooling that is subsequently removed to provide a clevis. Because of the legend "film adhesive" in Figure 1, one skilled in the art would realize that the resin of the 3-D woven preform is being cured and the preform bonded by the film adhesive to the web simultaneously. A film adhesive requires pressure to best work, and the pressure would have to be exerted from the outer sides of the legs against the metal core. In order to exert the pressure, the legs of the preform would have to be flexible, and thus uncured. Consequently, the curing of the preform takes place while the film adhesive is bonding the legs to the metallic core.

If the preform of Figure 1 of Owens et al. was pre-cured, then an adhesive paste would be used to bond the metallic core to the preform rather than a film adhesive. Adhesive paste can be thicker than a film adhesive and typically does not require outside pressure against the legs to form a bond. Figure 7 shows a web of 2-D material located within a slot of a preform, but provides no explanation of whether or how it is attached to the preform. There is no discussion in the paper of how any the specimens are formed.

Applicant's claim 13 requires inserting a sizing tool between the legs and curing the resin while the tool is located between the legs to define the slot. It then requires removing the tool and applying an adhesive into the slot. The claim then requires inserting the second component into the slot to bond the second component to the preform. Consequently, the preform is already cured before it is adhered to the second component. Owens et al. does not disclose a pre-cured

preform, rather Owens et al. suggests placing the second component between the legs of the preform and bonding and curing the preform simultaneously.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 13 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

One would not combine Owens et al. and Köhler because Owens et al. deals with testing the strength of a woven preform that is located between first and second components. Köhler, on the other hand, teaches pultruding a flange and attaching a web to the flange. Neither reference suggests curing a woven preform while having a sizing tool located between the legs, then removing the sizing tool. Claim 13 requires a film adhesive 27 between first component 15 and preform base 17. The references do not suggest placing a film adhesive between an uncured preform and a first component and placing a sizing tool between legs of the preform, then curing the preform while simultaneously bonding it to the first component.

Seeman teaches a peel ply and vacuum curing procedures. Peel ply 7 is located on the exterior of the composite member being formed by a vacuum process. There is no suggestion of using a peel ply between a sizing tool and the inside surfaces of legs of a woven preform. Claim

13 deals with the peel ply located within the slot, and is not shown in the references as previously mentioned.

Applicant therefore requests allowance of claim 13.

Issue 6

The Examiner has rejected claim 15 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Sloman.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler, Owens et al., and Sloman.

Claim 12 is an independent claim from which claim 13 depends, and requires inserting a sizing tool between the legs of a woven preform and curing the resin and bonding the preform to the first component while the tool is located between the legs to define a slot. The references do not show a sizing tool for forming a clevis. Nor do the references show a sizing tool being utilized to form a clevis while simultaneously bonding the preform to the first component. The claim also requires after removing the sizing tool, applying a paste adhesive to the slot, then inserting the second component into the slot for bonding by the paste adhesive.

Owens et al. discloses nothing concerning a sizing tool. Owens et al. discloses the use of a film adhesive between the legs and the metal core member, which implies that the woven preform is being cured while the film adhesive is simultaneously bonding the core to the preform. The metallic core could thus not be a sizing tool. While Köhler discloses the use of a

paste adhesive, Köhler does not suggest the use of a woven preform wherein a sizing tool was utilized to form the clevis.

Further, Owens et al. discloses a method of testing a 3-D woven preform. The metallic core shown in Figure 1 is bonded by a film adhesive to the preform. The metallic core shown is employed in the testing and is not tooling that is subsequently removed to provide a clevis. Because of the legend "film adhesive" in Figure 1, one skilled in the art would realize that the resin of the 3-D woven preform is being cured and the preform bonded by the film adhesive to the web simultaneously. A film adhesive requires pressure to best work, and the pressure would have to be exerted from the outer sides of the legs against the metal core. In order to exert the pressure, the legs of the preform would have to be flexible, and thus uncured. Consequently, the curing of the preform takes place while the film adhesive is bonding the legs to the metallic core.

If the preform of Figure 1 of Owens et al. was pre-cured, then an adhesive paste would be used to bond the metallic core to the preform rather than a film adhesive. Adhesive paste can be thicker than a film adhesive and typically does not require outside pressure against the legs to form a bond. Figure 7 shows a web of 2-D material located within a slot of a preform, but provides no explanation of whether or how it is attached to the preform. There is no discussion in the paper of how any the specimens are formed.

Applicant's claim 15 requires inserting a sizing tool between the legs and curing the resin while the tool is located between the legs to define the slot. It then requires removing the tool and applying an adhesive into the slot. The claim then requires inserting the second component into the slot to bond the second component to the preform. Consequently, the preform is already cured before it is adhered to the second component. Owens et al. does not disclose a pre-cured

preform, rather Owens et al. suggests placing the second component between the legs of the preform and bonding and curing the preform simultaneously.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 15 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

One would not combine Owens et al. and Köhler because Owens et al. deals with testing the strength of a woven preform that is located between first and second components. Köhler, on the other hand, teaches pultruding a flange and attaching a web to the flange. Neither reference suggests curing a woven preform while having a sizing tool located between the legs, then removing the sizing tool. Claim 15 requires a film adhesive 27 between first component 15 and preform base 17. The references do not suggest placing a film adhesive between an uncured preform and a first component and placing a sizing tool between legs of the preform, then curing the preform while simultaneously bonding it to the first component.

Sloman, newly cited in paragraph 7 of the Final Action, teaches a caul plate or pressure intensifier to hold and align composite components during curing to transmit normal pressure across the composite components. However, there is no suggestion of the caul plates or pressure intensifiers being generally triangular in cross-section to distribute a force across the composite

components. Claim 15 deals with each of the over-presses being generally triangular in cross-section for distributing a force across the preform, and is not shown in the references as previously mentioned.

Applicant therefore requests allowance of claim 15.

Issue 7

The Examiner has rejected claim 18 as being unpatentable under 35 U.S.C. § 103(a) for obviousness over Wanthal et al. in view of Kohler, and further in view of Owens et al., and further in view of Seeman, and further in view of Sloman.

Applicant asserts that Wanthal et al. is not prior art, for the reasons stated, *supra*. Further, having established that Wanthal et al. does not operate as prior art, Applicant further asserts that it is improper to combine only Kohler, Owens et al., Seeman, and Sloman.

Owens et al. discloses a method of testing a 3-D woven preform. The metallic core shown in Figure 1 is bonded by a film adhesive to the preform. The metallic core shown is employed in the testing and is not tooling that is subsequently removed to provide a clevis. Because of the legend "film adhesive" in Figure 1, one skilled in the art would realize that the resin of the 3-D woven preform is being cured and the preform bonded by the film adhesive to the web simultaneously. A film adhesive requires pressure to best work, and the pressure would have to be exerted from the outer sides of the legs against the metal core. In order to exert the pressure, the legs of the preform would have to be flexible, and thus uncured. Consequently, the curing of the preform takes place while the film adhesive is bonding the legs to the metallic core.

If the preform of Figure 1 of Owens et al. was pre-cured, then an adhesive paste would be used to bond the metallic core to the preform rather than a film adhesive. Adhesive paste can be

thicker than a film adhesive and typically does not require outside pressure against the legs to form a bond. Figure 7 shows a web of 2-D material located within a slot of a preform, but provides no explanation of whether or how it is attached to the preform. There is no discussion in the paper of how any the specimens are formed.

Applicant's claim 18 requires inserting a sizing tool between the legs and curing the resin while the tool is located between the legs to define the slot. It then requires removing the tool and applying an adhesive into the slot. The claim then requires inserting the second component into the slot to bond the second component to the preform. Consequently, the preform is already cured before it is adhered to the second component. Owens et al. does not disclose a pre-cured preform, rather Owens et al. suggests placing the second component between the legs of the preform and bonding and curing the preform simultaneously.

Köhler does not disclose a woven preform. Referring to Figure 4, flange 1 is formed by pultrusion. Flange 1 is made up of unidirectional filaments and resin and is drawn and cured in the configuration of a clevis. This procedure is discussed in the specification such as at column 4, lines 60-68. There is no discussion of attaching flange 1 to a first component. Claim 18 requires adhering a base of a woven preform to a first component, then inserting a sizing tool between the legs and curing the resin of the preform while the tool is located between the legs to define a slot, then removing the tool. Köhler does not suggest using a sizing tool, rather teaches to form flange 1 formed by a die in a pultrusion process. Web 2 is not a sizing tool that is removed after flange 1 is formed. Rather web 2 is bonded to flange 1 with an adhesive 4.

One would not combine Owens et al. and Köhler because Owens et al. deals with testing the strength of a woven preform that is located between first and second components. Köhler, on the other hand, teaches pultruding a flange and attaching a web to the flange. Neither reference

suggests curing a woven preform while having a sizing tool located between the legs, then removing the sizing tool. Claim 18 requires a film adhesive 27 between first component 15 and preform base 17. The references do not suggest placing a film adhesive between an uncured preform and a first component and placing a sizing tool between legs of the preform, then curing the preform while simultaneously bonding it to the first component.

Seeman teaches a peel ply and vacuum curing procedures. Peel ply 7 is located on the exterior of the composite member being formed by a vacuum process. There is no suggestion of using a peel ply between a sizing tool and the inside surfaces of legs of a woven preform. Claim 18 deals with the peel ply located within the slot, and is not shown in the references as previously mentioned.

Sloman, newly cited in paragraph 8 of the Final Action, teaches a caul plate or pressure intensifier to hold and align composite components during curing to transmit normal pressure across the composite components. However, there is no suggestion of the caul plates or pressure intensifiers being generally triangular in cross-section to distribute a force across the composite components. Claim 18 deals with each of the over-presses being generally triangular in cross-section for distributing a force across the preform, and is not shown in the references as previously mentioned.

Applicant therefore requests allowance of claim 18.

IX. APPENDIX

The Appendix provides a copy of the claims presented in this appeal.

X. CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejections of claims 1-18 are erroneous, and reversal of the Examiner's decision is respectfully requested.

Applicant does not request an oral hearing for this appeal. Enclosed is a check covering the proper filing fee of $330. For any additional fees or charges, please charge them to Deposit Account No. 50-0259.

Respectfully submitted,

Date: March 2, 2004

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APPENDIX

1. A method for assembling first and second composite components, the method comprising:

   (a) providing a woven preform having a base and a pair of spaced-apart legs extending from the base;

   (b) infusing the preform with resin, and adhering the base of the preform to the first component; then

   (c) inserting a sizing tool between the legs and curing the resin while the tool is located between the legs to define a slot; then

   (d) removing the tool and applying an adhesive into the slot; then

   (e) inserting the second component into the slot, the adhesive in the slot adhering at least one surface of the second component to at least one inner surface of the slot for retaining the second component within the slot, the second component having a smaller width than the tool.

2. The method of claim 1, wherein:

   step (b) further comprises locating a film adhesive between the base of the preform and the first component.

3. The method of claim 1, wherein:

   step (c) further comprises locating a peel ply within the slot, the peel ply separating the tool and the preform and being removable from the slot after the tool is removed.

4. The method of claim 1, further comprising:

coating the tool with a non-stick material to prevent adhesion of the tool to the legs and to reduce the force needed to remove the tool after curing of the preform.

5. The method of claim 1, wherein:

step (c) further comprises placing semi-rigid over-presses against outer surfaces of the base and the legs preform and placing the first component, the preform, the over-presses and the tool within a vacuum bag while curing the preform, each of the over-presses being generally triangular in cross-section for distributing a force across the preform.

6. The method of claim 1, further comprising:

adhering an over-wrap ply to the preform.

7. The method of claim 1, wherein:

steps (c) further comprises forming the legs to be perpendicular to the base.

8. The method of claim 1, wherein:

steps (c) further comprises forming the legs to be parallel to each other.

9. The method of claim 1, wherein:

step (c) further comprises vacuum bagging the components and preform to ensure proper sizing and bonding.

10. The method of claim 1, wherein:

the tool has a greater width than the second component, providing a clearance for the adhesive in the slot.

11. The method of claim 1, wherein:

step (d) further comprises coating inside surfaces of the legs with the adhesive.

12. A method for assembling first and second composite components, the method comprising:

(a) providing a three-dimensional, woven preform having a base and a pair of spaced-apart, generally-parallel legs extending from the base; then

(b) infusing the preform with resin, and adhering at least one surface of the preform to at least one surface of the first component using a film adhesive; then

(c) inserting a sizing tool between the legs and curing the resin and film adhesive while the tool is located between the legs to define a slot and bond the preform to the first component; then

(d) removing the tool and applying a paste adhesive into the slot, the paste adhesive coating inside surfaces of the legs; and

(e) inserting the second component into the slot, the paste adhesive adhering at least one surface of the second component to at least one inner surface of the slot for retaining the second component within the slot, the second component having a smaller width than the tool.

13. The method of claim 12, further comprising:

step (c) comprises locating a peel ply within the slot, the peel ply being between the tool and the preform and being removable from the slot after the tool is removed.

14. The method of claim 12, further comprising:

coating the tool with a non-stick material to reduce the force needed to remove tool after curing of the preform.

15. The method of claim 12, wherein:

step (c) further comprises placing semi-rigid over-presses against outer surfaces of the base and the legs of the preform and placing the preform, the first component, the tool and the over-presses within a vacuum bag while curing the preform, the over-presses being generally triangular in cross-section for distributing a force across the preform.

16. The method of claim 12, further comprising:

adhering an over-wrap ply to the preform and to the adhesive film.

17. The method of claim 12, wherein:

step (c) further comprises vacuum bagging the components and preform to ensure proper sizing and bonding.

18. A method for assembling first and second composite components, the method comprising:

(a) providing a three-dimensional, woven preform having a base and a pair of spaced-apart parallel legs extending from the base;

(b) infusing the preform with resin, and adhering the base of the preform to at least one surface of the first component using a film adhesive, the first component being a composite member that is pre-cured; then

(c) inserting a peel ply between the legs and inserting a tool within the peel ply between the legs; then

(d) placing semi-rigid over-presses against outer surfaces of the base and the legs of the preform and placing the first component, the preform, the over-presses and the tool within a vacuum bag and curing the resin and film adhesive while the tool is located

between the legs to define a clevis and bond the preform to the first component, the legs being perpendicular to the base; then

(e) removing the tool, removing the peel ply, and applying a paste adhesive into the clevis; and

(f) inserting the second component into the clevis, the second component being a composite member that is pre-cured, the paste adhesive adhering at least one surface of the second component to at least one inner surface of the clevis for retaining the second component within the clevis, the second component having a smaller width than the tool.